

U.S. PTO Customer No. 25280

Cas # 5392

Claim Amendments

1. (currently amended) An antimicrobial sol-gel film comprising at least one silver-containing inorganic antimicrobial agent, wherein said film exhibits a log kill rate for *Klebsiella pneumoniae* of at least 0.5 as measured under a modified plate contact method, and wherein said film is capable of adherence to a hard surface substrate at a temperature of between 100°C and 800°C.
2. (original) The antimicrobial sol-gel film of Claim 1 wherein said film exhibits a log kill rate for *Klebsiella pneumoniae* of at least 1.0.
3. (original) The antimicrobial sol-gel film of Claim 2 wherein said film exhibits a log kill rate for *Klebsiella pneumoniae* of at least 2.0.
4. (original) The antimicrobial sol-gel film of Claim 3 wherein said film exhibits a log kill rate for *Klebsiella pneumoniae* of at least 3.0.
5. (original) The antimicrobial sol-gel film of Claim 4 wherein said film exhibits a log kill rate or *Klebsiella pneumoniae* of at least 3.5.
6. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 100°C and at most 800°C, to which the sol-gel film of Claim 1 has been applied.
7. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion

U.S. PTO Customer No. 25280

Case# 5392

temperature of at least 100°C and at most 800°C, to which the sol-gel film of Claim 2 has been applied.

8. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 100°C and at most 800°C, to which the sol-gel film of Claim 3 has been applied.
9. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 100°C and at most 800°C, to which the sol-gel film of Claim 4 has been applied.
10. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 100°C and at most 800°C, to which the sol-gel film of Claim 5 has been applied.
11. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 300°C and at most 800°C, to which the sol-gel film of Claim 1 has been applied.
12. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 300°C and at most 800°C, to which the sol-gel film of Claim 2 has been applied.
13. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 300°C and at most 800°C, to which the sol-gel film of Claim 3 has been applied.

U.S. PTO Customer No. 25280

Case# 5392

14. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 300°C and at most 800°C, to which the sol-gel film of Claim 4 has been applied.
15. (cancelled) A hard surface substrate that exhibits a melt and/or heat distortion temperature of at least 300°C and at most 800°C, to which the sol-gel film of Claim 5 has been applied.
16. (currently amended) A hard surface substrate to which a sol-gel film has been applied over at least a portion of the surface thereof at a temperature of between 100°C and 800°C, wherein the sol-gel film contains at least one ~~metal~~ silver-containing inorganic antimicrobial agent, and wherein said hard surface substrate exhibits a log kill rate for *Klebsiella pneumoniae* of at least 0.5, as measured under a modified plate contact method, at said portion to which said sol-gel film has been applied.
17. (currently amended) A The hard surface substrate of Claim 16 ~~to which a sol-gel film has been applied over at least a portion of the surface thereof at a temperature of between 100°C and 800°C, wherein the sol-gel film contains at least one metal-containing inorganic antimicrobial agent, and wherein said hard surface substrate exhibits a log kill rate for *Klebsiella pneumoniae* of at least 1.0 at said portion to which said sol-gel film has been applied.~~
18. (currently amended) A The hard surface substrate of Claim 16 ~~to which a sol-gel film has been applied over at least a portion of the surface thereof at a temperature of between 100°C and 800°C, wherein the sol-gel film contains at least one metal-containing inorganic~~

U.S. PTO Customer No. 25280

Case# 5392

~~antimicrobial agent, and~~ wherein said hard surface substrate exhibits a log kill rate for *Klebsiella pneumoniae* of at least 2.0 at said portion to which said sol-gel film has been applied.

19. (currently amended) A ~~The hard surface substrate of Claim 16 to which a sol-gel film has been applied over at least a portion of the surface thereof at a temperature of between 400°C and 800°C, wherein the sol-gel film contains at least one metal-containing inorganic antimicrobial agent, and~~ wherein said hard surface substrate exhibits a log kill rate for *Klebsiella pneumoniae* of at least 3.0 at said portion to which said sol-gel film has been applied.
20. (currently amended) A ~~The hard surface substrate of Claim 16 to which a sol-gel film applied over at least a portion of the surface thereof at a temperature of between 100°C and 800°C, wherein the sol-gel film contains at least one metal-containing inorganic antimicrobial agent, and~~ wherein said hard surface substrate exhibits a log kill rate for *Klebsiella pneumoniae* of at least 3.5 at said portion to which said sol-gel film has been applied.
21. (original) The hard surface substrate of Claim 18 exhibiting the same log kill rate after said substrate has been immersed in a heated caustic bath, having a pH level of at least 12, for 48 hours.
22. (original) The hard surface substrate of Claim 19 exhibiting the same log kill rate after said substrate has been immersed in a heated caustic bath, having a pH level of at least 12, for 48 hours.
23. (original) The hard surface substrate of Claim 20 exhibiting the same log kill rate after

U.S. PTO Customer No. 25280

Case# 5392

said substrate has been immersed in a heated caustic bath, having a pH level of at least 12, for 48 hours.

24. (new) The antimicrobial sol-gel film of Claim 1 wherein said film is capable of adherence to a hard surface substrate at a temperature of between 300°C and 800°C.

25. (new) A hard surface substrate to which a sol-gel film has been applied over at least a portion of the surface thereof at a temperature of between 300°C and 800°C, wherein the sol-gel film contains at least one silver-containing inorganic antimicrobial agent, and wherein said hard surface substrate exhibits a log kill rate for *Klebsiella pneumoniae* of at least 0.5, as measured under a modified plate contact method, at said portion to which said sol-gel film has been applied.